

1. A method of increasing the efficiency of a luminescent material having
2 current carriers with a spin flip rate, an emissive singlet recombination channel, and a
non-emissive triplet recombination channel, and wherein the singlet recombination cross
4 section is greater than the triplet recombination cross section, the method comprising:

processing the luminescent material so as to increase the spin flip rate of the
6 current carriers.

2. The method of claim 1, wherein the processing includes adding an
2 impurity to the luminescent material.

3. The method of claim 1, wherein the processing includes a magnetic field.

4. The method of claim 1, wherein the processing includes an increase in
2 effective spin temperature.

5. The method of claim 1, wherein the material is a polymer.

6. The method of claim 1, wherein the material is an oligomer

7. The method of claim 1, wherein the material is a molecular crystal.

8. The method of claim 1, wherein the material is a fullerene.

9. The method of claim 1, wherein the impurity is magnetically active.
10. The method of claim 1, wherein the impurity is a paramagnetic.
11. The method of claim 1, wherein the impurity facilitates low-frequency
2 vibrations.
12. A light-emitting device incorporating the material of claim 1.
13. A method of improving the efficiency of an organic light-emitting material
2 having carriers which exhibit a spin-lattice relaxation rate, the method comprising:
adding an impurity to the material so as to increase the spin-lattice relaxation rate
4 of the carriers.
14. The method of claim 13, wherein the material is a polymer.
15. The method of claim 13, wherein the material is an oligomer.
16. The method of claim 13, wherein the material is a molecular crystal.
17. The method of claim 13, wherein the material is a fullerene.

18. The method of claim 13, wherein the impurity is magnetically active.

19. The method of claim 13, wherein the impurity is a paramagnetic.

20. The method of claim 13, wherein the impurity facilitates low-frequency
2 vibrations.

21. A light-emitting device incorporating the material of claim 13.

22. An material for use in a high-efficiency light-emitting device, the material
2 comprising:

an electro-luminescent compound in which useful light emission occurs only
4 through the recombination of singlet excitons; and

an impurity, added so as to increase the spin flip rate of carriers propagating
6 through the material.

23. An electro-luminescent device, comprising:

2 a first electrode;

an electro-luminescent layer supporting the flow of current carriers having a spin-
4 flip rate;

a second electrode; and

- 6 an organic electro-luminescent material and an impurity added the electro-luminescent layer so as to increase the spin flip rate of the current carriers.

24. A laser, comprising:

- 2 a light-emissive layer from which light is emitted through the injection of current carriers having a spin-flip rate;
- 4 an optical resonator;
- an organic electro-luminescent material and an impurity added to the light-
- 6 emissive layer so as to increase the spin flip rate of the current carriers.